

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U. S. Patent

Application of: T. TAKABAYASHI

Serial Number : 10/647,120

Filed : August 21, 2003

For : ACTINIC RAY CURABLE COMPOSITION, ACTINIC RAY
CURABLE INK, IMAGE FORMING METHOD, AND INK JET RECORDING
APPARATUS

Group Art Unit: 1711

Examiner : Susan W Berman

DECLARATION UNDER 37 C.F.R. 1.132

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

I, TOSHIYUKI TAKABAYASHI, hereby declare and say as follows:

That I am a graduate from Kyoto University having been awarded a Bachelors Degree in Chemistry in March of 1992.

That since April of 1992, I have been employed by Konica Corporation (present Konica Minolta), the Assigner of the above-identified application. During my employment, I have been engaged in the research and the study of an actinic ray curable composition and ink jet ink in the Research and Development Laboratory of my company.

That I am a sole inventor of the present application.

That I am familiar with the subject matter of the present invention.

What follows is an accurate summary of experiments conducted according to my detailed instructions and under my personal supervision, and the results obtained therefrom.

1. Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by SMITH (4,394,403).

Smith does not positively disclose an oxetane compound of the formula set forth in claim 1 or in claim 6, i.e., an oxetane compound wherein in the Smith formula, R_3 , R_4 , R_5 , R_6 , R_7 , and R_8 are selected from hydrogen, alkyl, haloalkyl or aryl, provided that R_4 , R_5 , R_7 and R_8 are not simultaneously hydrogens. Further, Smith is silent about C-O bond lengths in the oxetane compounds or charge on the oxygen atom.

The Examiner states, "Smith does not mention C-O bond lengths in the oxetane compounds or charge on the oxygen atom, however, since the species of the disclosed compounds and species of the claimed compounds overlap, it would be expected that these properties would be inherent to the species disclosed, in the absence of evidence to the contrary."

In order to show that these properties would not be inherent in Smith, the C-O bond lengths and charge on the oxygen atom of the exemplified oxetane compound disclosed in Smith were measured. Smith does not disclose in detail examples of the oxetane compound of the formula set forth in column 6, lines 21-38. Smith discloses only one exemplified oxetane compound (hereinafter referred to as Oxetane compound 31 of Smith) in Example No. 31 (column 11) of the Smith Examples. Thus, the C-O bond lengths and charge on the oxygen atom of Oxetane compound 31 of Smith were measured. The results are shown in Table I.

Table I

| Oxetane compound | *C-O bond distance in the invention (nm) | Charge of the oxygen atom |
|---------------------------------|--|------------------------------|
| Oxetane compound 31 of Smith | 0.1460 | -0.277 |

"*" represents the distance of the longer C-O bond of the two C-O bonds.

As is apparent from Table I above, the C-O bond distance in the invention and charge of the oxygen atom of Oxetane compound 31 of Smith fall outside the claimed range, and therefore, the claimed range of the C-O bond distance in the invention and charge of the oxygen atom would not have been inherent in Smith.

In view of the above, Claims 1, 2, 6, 7, 11 and 12 are not anticipated by SMITH.

2. Claims 1-4 and 6-9 are rejected under 35 U.S.C. 102(e) as being anticipated by SASAKI et al (6,794,451).

Sasaki et al do not disclose the claimed oxetane compound, i.e., an oxetane compound wherein in the Sasaki et al formula 5, R_1 to R_6 denote hydrogen atoms or hydrocarbon groups, provided that R_1 , R_2 , R_3 and R_4 are not simultaneously hydrogen atoms. Further, Sasaki et al are silent about C-O bond lengths in the oxetane compounds or charge on the oxygen atom.

The Examiner states, "Sasaki et al do not mention C-O bond lengths in the oxetane compounds or charge on the oxygen atom, however, since the species of the disclosed compounds and species of the claimed compounds overlap, it would be expected that these properties would be inherent to the species disclosed, in the absence of evidence to the contrary."

In order to show that these properties would not be inherent in Sasaki et al, the C-O bond lengths and charge on the oxygen atom of the exemplified oxetane compounds disclosed

in Sasaki et al were measured. Sasaki et al disclose, as a particularly preferable monomer, a cyclic ether represented by formula 3 (column 6, lines 8-27), and further disclose, as specific examples of the compound represented by formula 3, Oxetane compound OXT-212, in which in formula 3, $R_7=R_8=H$, $R_{10}=\text{ethyl}$, $R_9=2\text{-ethylhexyl}$, and $X=\text{oxygen}$, and Oxetane compound OXR-12, which is represented by formula 7 (column 6, lines 28-31). Thus, the C-O bond lengths and charge on the oxygen atom of Oxetane compounds OXT-212 and OXR-12 of Sasaki et al were measured. The results are shown in Table II.

Table II

| Oxetane compounds | C-O bond distance in the invention (nm) | Charge of the oxygen atom |
|--|---|------------------------------|
| Oxetane compound OXT-212 of Sasaki et al | 0.1455 | -0.280 |
| Oxetane compound OXR-12 of Sasaki et al | 0.1456 | -0.278 |

As is apparent from Table II above, the C-O bond distance in the invention and charge of the oxygen atom of Oxetane compounds OXT-212 and OXR-12 of Sasaki et al fall outside the claimed range, and therefore, the claimed range of the C-O bond distance in the invention and charge of the oxygen atom would not have been inherent in Sasaki et al.

In view of the above, Claims 1-4 and 6-9 are not anticipated by SASAKI et al.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001, of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: May 13, 2005

Toshiyuki Takabayashi

TOSHIYUKI TAKABAYASHI